

## CLAIMS

We claim:

1. A method for attaching a biological molecule to a glass surface comprising the steps of:
  - 5 a) providing a silane-treated glass surface having an end-capped amino group;
  - b) reacting said end-capped amino group with a phosgene equivalent to form a protected isocyanate group; and
  - c) reacting said protected isocyanate group with an amino group of a biological molecule,  
10 thereby forming a covalent coupling and attaching said biological molecule to the glass surface.
2. The method of Claim 1 further comprising reacting a glass surface with an aminosilane thereby forming the silane-treated glass surface having an end-capped amino group.  
15
3. The method of Claim 1 wherein the phosgene equivalent is a carbonyl diimidazole or a ketoxime carbonate.
4. The method of Claim 3 wherein the carbonyl diimidazole is 1,1-carbonyldiimidazole.
- 20 5. The method of Claim 3 wherein the ketoxime carbonate is methyl ethyl ketoxime carbonate.

6. The method of Claim 1 wherein the biological molecule is selected from the group consisting of proteins, peptides, nucleic acid sequences and carbohydrates.
7. The method of Claim 1 wherein the glass surface is a microscope slide surface.
8. A method for attaching a biological molecule to a glass surface comprising the steps of:
  - 5 a) providing a silane-treated glass surface having an end-capped isocyanate group;
  - b) reacting said isocyanate group with a blocking reagent thereby forming a protected isocyanate group;
  - 10 c) reacting said protected isocyanate group with an amino group of a biological molecule, thereby forming a covalent coupling and attaching said biological molecule to the glass surface.
9. The method of Claim 8 further comprising reacting a glass surface with a silane compound having an isocyanate group, thereby forming the silane-treated glass surface having an end-capped isocyanate group.
- 15
10. The method of Claim 8 wherein the blocking reagent is an oxime.
11. The method of Claim 10 wherein the blocking reagent is methyl ethyl ketoxime
12. The method of Claim 8 wherein the biological molecule is selected from the
- 20 group consisting of proteins, peptides, nucleic acid sequences and carbohydrates.

13. The method of Claim 8 wherein the glass surface is a microscope slide surface.
14. A method for attaching a biological molecule to a glass surface comprising the steps of:
  - a) providing a silane-treated glass surface having an end-capped amino group;
  - b) reacting said amino group with a phosgene equivalent to form an end-capped group, said end-capped group including a functional group represented by the following structural formula:

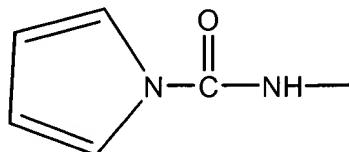
5

10

$$>\text{N}-\text{C}(\text{O})-\text{N}<$$
15. The method of Claim 14 wherein the phosgene equivalent is a carbonyl diimidazole or a ketoxime carbonate.

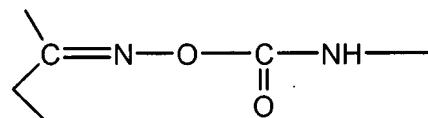
GOVERNMENT PROPERTY

16. The method of Claim 15 wherein the carbonyl diimidazole is 1,1-carbonyldiimidazole.
17. The method of Claim 15 wherein the ketoxime carbonate is methyl ethyl ketoxime carbonate.
- 5 18. The method of Claim 14 wherein said end-capped group is represented by the following structural formula:



19. The method of Claim 14 wherein said end-capped group is represented by the following structural formula:

10



20. A method for storing a microscope slide, suitable for covalently attaching a

molecule to a surface of said microscope slide, comprising the steps of:

- a) providing a silane-treated microscope slide surface having an end-capped isocyanate group; and
- b) reacting said isocyanate group with a blocking reagent thereby forming a protected isocyanate group.

5

- 21. The method of Claim 20 wherein the blocking reagent is an oxime.
- 22. The method of Claim 21 wherein the blocking reagent is methyl ethyl ketoxime.
- 23. A method for attaching a biological molecule to a silane-treated glass surface comprising the steps of:
  - a) reacting an end-capped amino group on said silane-treated glass surface with a phosgene equivalent to form a protected isocyanate group; and
  - b) reacting said protected isocyanate group with an amino group of a biological molecule, thereby forming a covalent coupling and attaching said biological molecule to said silane-treated glass surface.
- 10 15
- 24. A method for attaching a biological molecule to a glass-treated surface comprising the steps of:
  - a) reacting an end capped isocyanate group on said silane-treated glass surface with a blocking reagent thereby forming a protected isocyanate group;
  - b) reacting said protected isocyanate group with an amino group of a biological molecule, thereby forming a covalent coupling and attaching said biological
- 20

SEARCHED INDEXED  
SERIALIZED FILED  
APR 20 1988

molecule to said silane-treated glass surface.

25. A method for attaching a biological molecule to a silane-treated glass surface comprising the steps of:

5 a) reacting an amino group on said silane-treated glass surface with a phosgene equivalent to form an end-capped group, said end-capped group including a functional group represented by the following structural formula:

10  $>\text{N}-\text{C}(\text{O})-\text{N}<$

or by the following structural formula:

$>\text{N}-\text{C}(\text{O})-\text{O}-\text{N}<;$

and

15 b) reacting said end-capped group with an amino group of a biological molecule, thereby forming a covalent coupling and attaching said biological molecule to said silane-treated glass surface.

20 26. A method for storing a microscope slide, suitable for covalently attaching a molecule to a surface of said microscope slide, comprising reacting an isocyanate group on a silane-treated microscope slide surface with a blocking reagent, thereby forming a protected isocyanate group.